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name and description neatly pasted upon them. Each species paper has the generic initial and the specific name and description pasted upon it. This method virtually converts my herbarium into an invaluable *illustrated Gray's Manual*, and in my opinion is more handy than it would have been had I adopted the methods currently advocated.—WM. E. ANDREWS, *Blackburn University, Carlinville, Ill.*

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## NOTES AND NEWS.

MR. E. J. HILL is writing a series of articles for *Garden and Forest*, on the autumn flora of the Lake Michigan pine-barrens.

M. W. BEYERINCK has succeeded in isolating some of the very small algæ by a modification of the gelatine-plate process used by bacteriologists. Cf. *Bot. Zeit.*, 48, 725.

THE *Journal de Botanique* (Nov. 16), contains an account of the *Piperaceæ* of Ecuador, New Grenada, and Peru, in the collection of M. Ed. André, with descriptions of many new species, by M. C. De Candolle.

M. E. BOURQUELOT has examined the sugar in a large number of species of *Boletus*, as well as some *Amanitas*. He finds the sugar when the plants are young to be almost always tréhalose (2.7—7.8 per cent.), which is replaced with increasing age by mannite.

DR. THOMAS MORONG has returned from his long South American trip, and has been appointed curator of the herbarium of Columbia College. Mr. Morong is to be congratulated upon his successful trip, and upon the very congenial and fitting position that he found awaiting his return.

A VERY INTERESTING discovery of an arctic plant in Alpine regions, was made last summer by Professor M. A. Carleton, of Garfield University, Wichita, Kansas. *Douglasia arctica* Hook., known only from our northwestern arctic seashores, and poorly known even from that locality, was discovered on Pike's Peak, Colorado.

AN ELEVATION of temperature of 20° C., due to growth was observed by H. Devaux (*Bull. Soc. Bot. de France*, xxxvii, 168) in a pile of stored potatoes that had produced sprouts a foot or so long. The surrounding air indicated 18 to 19° C., the tubers on the outside of the pile 1 or 2 degrees higher, and at the center of the pile, 2 meters from the surface, the temperature stood at 39° C.

MM. SCHLOESING, JR. AND LAURENT have shown by a direct method that the Leguminosæ can fix free nitrogen. Instead of determining the amount of N in the seed and subsequently the amount in the crop, they measured the N, O, and CO<sub>2</sub> introduced into a chamber with growing plants. After three months they again determined these gases, when the N was found to have diminished. Every precaution seems to have been taken against error.

A CANADIAN Botanists' Correspondence association was formed in December last, composed of botanists who collect and preserve specimens of the Canadian flora, and who are willing to afford information and assistance to others in the study of botany. A variety of other good objects is set forth in their constitution, and the whole movement deserves hearty support and encouragement. The officers who constitute the executive of the association are John Dearness, London, Ontario, chairman, and J. A. Morton, Wingham, Ontario, secretary.

AT THE LEEDS meeting of the British Association, the subject of teaching botany in the schools was discussed. Professor Marshall Ward introduced it, and in the discussion that followed it was evident that British botanists are becoming aroused to the attitude that their American brethren have held for many a long day. They agreed "that it is time to leave the blind worship of facts, and instead of measuring a scholar's progress by the amount of dogmatic information imbibed and put into an examination paper, to look to his understanding of the relation between facts and the intelligence with which he describes what he sees." We had imagined that any sentiment contrary to this had gone out with the coming in of laboratory methods.

VINCENT CHMIELEWSKY has reëxamined the behavior of *Spirogyra* in conjugation, and particularly the changes in the formation and growth of the zygospore. He finds that the protoplasm of the male cell acts only as a vehicle for the transportation of the nucleus, the essence of the act of fertilization being the union of the male and female nuclei. The chlorophyll band or bands, pyrenoids, etc., instead of uniting with the corresponding structures of the female cell, as has been believed, become disorganized. Traces of these disorganized parts remain in the zygospore even till germination. Only the persistent structures of the female cell enter the tube which is formed on the germination of the zygospore. These observations, while differing very materially from those of other observers, coincide more closely with what we know of fertilization in other plants.

IN THE LAST *Bulletin of the Torrey Botanical Club* (Dec.) Dr. N. L. Britton presents his third contribution entitled, "New or Noteworthy N. Am. Phanerogams." *Ranunculus Porteri* is a new species from Henry's Fork, collected some years ago by the Hayden survey. The somewhat unsatisfactory label reads very much as though the plant had been collected in 1872, when J. M. Coulter was the collector. *Capsella divaricata* Walp. is thought to be identical with the Old World *C. procumbens* L.; it is suggested that *Hypericum Canadense* L., var. *majus* Gray is worthy of specific rank; *Calandrinia pygmaea* Gray is made *C. Grayi* Britt. on account of an earlier Australian species bearing the former specific name; *Lotus Helleri* is a new species disentangled from *L. Americanus* Bisch. (*Hosackia Purshiana* Benth.); *Spiraea Virginiana* is a new species from W. Va.; and a new *Cyperus* from Key West is described.

THE PROCEEDINGS of the eleventh meeting of the Society for the Promotion of Agricultural Science, held last August in Indianapolis, have been distributed. The most notable botanical article in the volume is the index to the common names of grasses, compiled by Prof.

Lamson-Scribner. It covers eighteen pages, and appears very complete. The other botanical articles are short, and part are in abstract. They are as follows: Preliminary notes upon the rotting of potatoes, by T. J. Burrill; Scab of wheat heads, by Clarence M. Weed, describing a *Fusisporium*; Recent observations on black rot of the grape, and comparative test of copper preparations for black rot of the grape, by B. T. Galloway; Some fungus root diseases, by L. H. Pammel. The abstracts are: Forage problem of the plains, by C. E. Bessey; Rots of the sweet potato, by B. D. Halsted; Cucurbita an American genus, by E. L. Sturtevant; Some biographical factors in the nutrition of plants, by M. Miles.

THE INDIANA ACADEMY OF SCIENCES met at Indianapolis December 29-31. The botanical papers announced were as follows: *Stanley Coulter*, Preliminary note on the genus *Polygonum*, Aberrant fruit of *Juglans nigra*, Value of minute anatomy in plant classification; *D. T. McDougal*, Aberrant forms of *Juglans nigra*; *David M. Mottier*, Notes on the apical growth of liverworts, Notes on the germination of spores of *Notothylas*; *J. C. Arthur*, A remarkable oscillating movement of protoplasm in a *Mucor*, Accelerating germination by previous immersion of the seed in hot water; *Henry E. Seaton*, Notes on Guatemalan Compositæ; *E. M. Fisher*, Parasitic fungi of Indiana; *John Morgan*, Circulation of sap; *J. N. Rose*, Distribution of *Peucedanum* in N. Am., Plants collected by Dr. Palmer in Arizona in 1890; *D. H. Campbell*, Comparative structure of the roots of *Osmunda* and *Botrychium*, Notes on the prothallium of the *Osmundaceæ*; *H. L. Bolley*, Notes on a new *Puccinia*, On the manufacture of plant infusions for the culture of bacteria; *W. P. Shannon*, The occurrence of *Veratrum Woodii* in Decatur Co., Ind.; *Joseph H. Tudor*, Some features in the occurrence of *Viola pedata*, var. *bicolor*; *W. J. Spillman*, Preliminary list of Knox Co. plants, Introduction of noxious weeds; *Katherine E. Golden*, Weight of seed in relation to production; *John M. Coulter*, Biological surveys, The flora of Texas.